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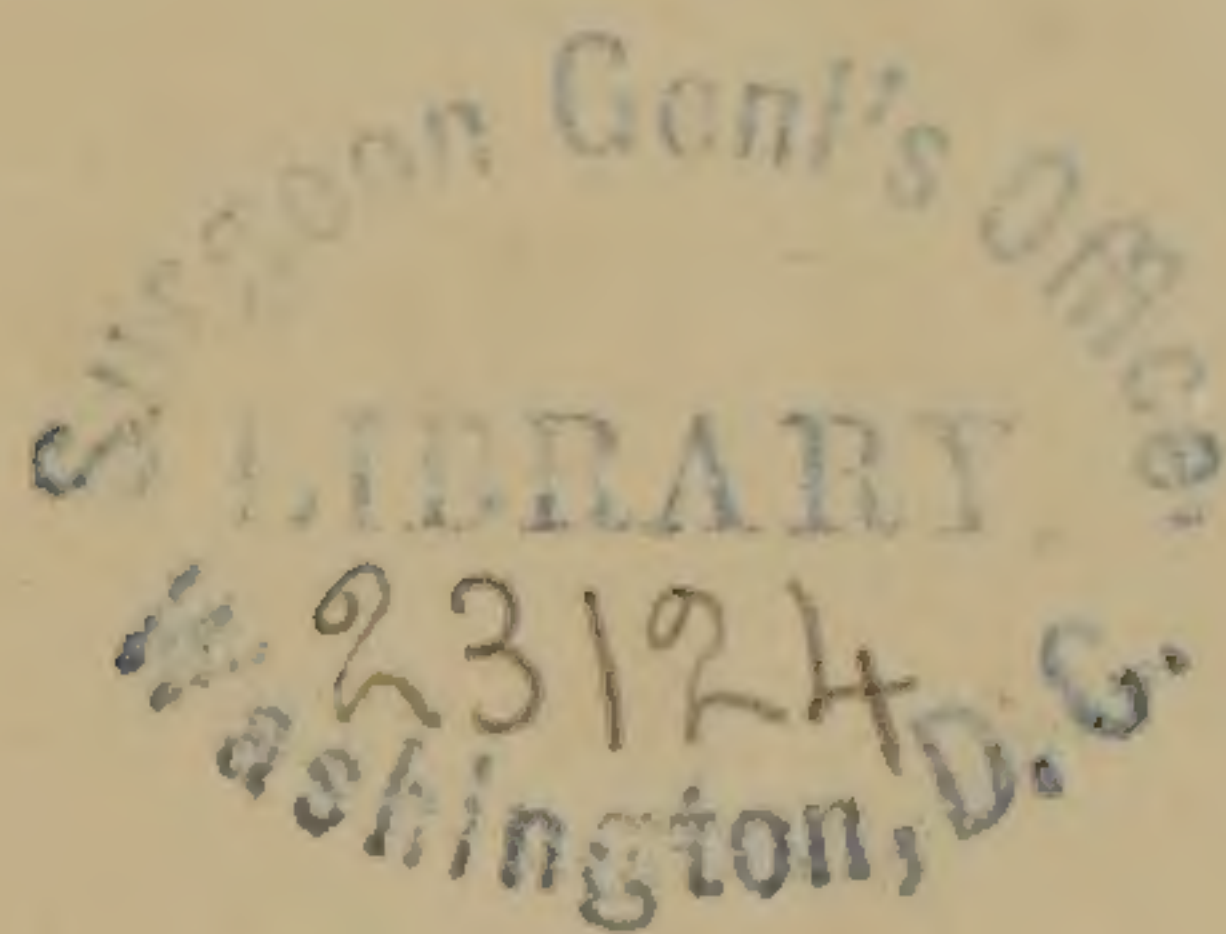
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SURGICAL CASES.

BY

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THE following cases, embracing either rare forms of disease, novelty in mode of operation, or variation in results from previous statistics, were thought to be not unworthy the notice of Profession, to whom they are respectfully presented.

D. W. C.

1267 Washington Street,
BOSTON, APRIL, 1869.

SURGICAL CASES.

ENCEPHALOID TUMOR OF TONSIL; REMOVAL BY EXTERNAL DISSECTION.

THE following case presents two points of great interest. *First*, cancerous disease is excessively rare in the tonsil; *second*, the mode of operating for its removal, *by external incision*, is believed to be without precedent.

G. M., a well-formed, robust sailor, aged 34 years, without any hereditary predisposition to disease, and in the enjoyment of perfect health previous to his present disability, presented himself at the hospital with the following history. Six months before, without any known cause, his left tonsil became enlarged and painful. It was treated by his physician as a case of tonsillitis, and, in due time, a portion of it was excised from within. No relief followed, but, instead, the tonsil continued to increase in size, and the region of the section became an obstinate ulceration. His articulation and deglutition were impaired to a considerable degree, and dyspnœa was quite marked, especially at night.

On his entrance to the hospital the affected tonsil appeared much enlarged. The mass protruded into the fauces, and at its apex presented an indolent ulcerated surface, one inch and a half in diameter, with raised and everted edges. Externally, corresponding with the internal growth, and moving with it as if it were a part, was a nodule lying in the left sub-maxillary triangle, of the size of an English walnut. Manipulation of this mass gave pain. The condition of the man otherwise was excellent. There was neither the history, nor any appearance of syphilis.

He was able to take only liquid diet, and was ordered a gargle of diluted liquor sodæ chlorinatæ, the discharge from the ulcer being offensive.

During an interval of three weeks, it was observed that the tumor doubled in size, internally and externally. The consequent symptoms became much more grave, and called for some operative interference. The situation and large size of the tumor, as well as

its projection outside the throat, contra-indicated any operation from inside the mouth, and it was therefore decided to attempt removing it from the outside by external incision.

Operation.—Etherization was slow and difficult, on account of the obstruction to respiration by the tumor in the fauces. As soon as it was accomplished, an incision was made, extending from just within the angle of the jaw, downward, over the most prominent part of the tumor, a distance of three inches and a half, and in direction parallel with the sterno-mastoid muscle; this incision was met by another, one inch and a half long, extending along the lower border of the jaw. The parts were dissected away on either side until the diseased growth was reached. On enucleation this was found to be an enlarged and diseased lymphatic gland, of the size of an English walnut. It had no distinct connection with the tonsil within, but the disease was encephaloid in character. It lay outside all important structures, and was entirely removed without difficulty. The dissection was now extended until the tonsil was reached. In its course, the digastric, the stylo-hyoid and the stylo-glossus muscles were divided, the stylo-pharyngeus being left intact, on account of its proximity to the glosso-pharyngeal nerve. The fibres of the superior constrictor of the pharynx were picked apart with a director, and the pharynx thus opened between them. The finger of the operator was now enabled to sweep entirely around the diseased tonsil, the pillars of the soft palate being left intact; the mass was removed, and presented all the appearances of encephaloid disease, its size being that of a pullet's egg.

The hæmorrhage during the operation was free but not excessive; the largest vessel divided being the facial artery, which was cut close to the carotid. Twelve ligatures were applied. A few of the smaller branches of the facial nerve were divided, and paralysis of the lower lip, on the same side, was the consequence. It was also observed that, on account of the section of the stylo-glossus muscle, the tongue, when protruded, took a direction toward the opposite side. A single suture closed the horizontal incision; the wound otherwise was left freely open, air passing through it with each expiration. Recovery from ether was speedy, and there was no marked depression from the operation.

Not a single complication occurred to hinder the progress of recovery. Suppuration of a satisfactory character commenced on the second day. During the first week after the operation the patient took liquid nourishment, administered by means of the stomach-pump. From the outset there was no pain, and respiration was easy. The granulating process was rapid, and at the end of eight days no fluid passed through the wound in deglutition. After eleven days a small patch was observed at the lower part of the posterior pillar of the palate, which had the appearance of the original malignant growth; it was freely cauterized with nitric acid,

and there was no subsequent reappearance. After seventeen days, solid food was swallowed without difficulty. In thirty-one days the wound had entirely closed. The pharynx was entirely clear; and except that the pillars of the palate on the side affected were somewhat separated, it appeared in perfectly normal condition. The tongue was protruded in a straight line, and no paralysis of the lip remained. From the operation until recovery, there was no constitutional disturbance requiring special notice.

As has been already stated, the gross appearance of both tonsil and gland were alike, and unmistakably encephaloid. The following is a record of the microscopic appearance:

“The tumor was of a soft and friable nature, slightly lobulated, and of a grayish-red color. On section it yielded an abundance of juice of a milky color, and of considerable consistency. Under the microscope both the tonsil and the enlarged lymphatic gland appeared the same. They were composed of cells of moderate and uniform size and ovoid form, containing nuclei, and many, also, nucleoli. There was no fibrous tissue between them, but a great number of small dark granules, appearing to be freed nucleoli. On the addition of acetic acid the nuclei became more distinct, and cells were visible containing three or four of them.

“To base the diagnosis of the character of a tumor upon its microscopic appearance alone, is a mistake not to be committed.

“No single element of which a structure is composed can be looked upon as characteristic of the cancerous form of growth only. Neither the character of the cells, nor the nature of the matrix, nor the arrangement of the elementary constituents, can separately determine the point; and it is only by carefully comparing the collective appearances observed upon microscopical examination, that we can decide.

“If we examine the cellular pathology of cancer, we shall find that in the whole range of pathological growths there cannot be found any structure of an absolutely new form, or one which, in one way or another, cannot be regarded as a reproduction of physiological tissues.

“The mere form of cells which compose a structure is of no decisive value; and although it is thought by many that any cell of a spindle or caudate shape with large nuclei is a cancer-cell, yet the fact that on the surfaces of the urinary passages in their whole extent, the same curious bodies, provided with large nuclei and nucleoli, are found, tends to upset the whole theory of there being anything peculiar in a cancer-cell.”

Rarity.

“Cancer of the tonsils is a very rare disease, whether scirrhus or encephaloid. Its existence is even doubted by some authorities, and it is not mentioned by the majority. It has been observed by Lobstein, J. C. Warren, Velpeau (five cases), Vidal de Cassis,

Roux and Fano, Lebert and Demarquay. It is observed, for the most part, from the age of forty up to advanced life; and presents itself oftenest in the form of a tumor developed in these glandular bodies, and, at an advanced stage, with the appearance of an open ulcer, showing all the characteristics of cancerous disease.

“Cancer of the tonsils is primary or secondary; sometimes limited to that gland or even to one of its parts (Fano); in other cases sending out irradiations more or less extended towards the neighboring parts, particularly at the side of the velum palati, or re-appearing in other organs.

“The submaxillary ganglia frequently submit to the law of secondary invasion, which influences the lymphatic glands whose vessels proceed from parts affected with cancer.

“The degeneration is in general encephaloid, rarely scirrhus.

“*Diagnosis:* cancer of the tonsils can be confounded with hypertrophy or with syphilitic changes.

“If at the outset the cancer appears with the aspect of a benign hypertrophy, or if on the other hand the jagged appearance of the tonsil, the ulceration of the orifices of the lacunæ, can in a simple hypertrophy make one think of a cancerous degeneration, there comes a time when the presence of stony hardness, of sanious offensive ulcerations, of signs of cancerous cachexy, or the progress of the malady allow its nature to be appreciated.

“The syphilitic changes of the tonsil most often confounded with cancer, are the gummous tumors at different periods of development, and above all at the time of their ulceration. And indeed it is an error with difficulty avoided in the absence of knowledge of the antecedents of the patient, or at least of the proof of a specific treatment.

“Another kind of syphilitic lesion can moreover be a source of error. It is the hypertrophy and the vegetation of plaques muqueuses of the tonsils.”—*Nouveau Dictionnaire de Médecine et de Chirurgie pratiques*. Tome deuxième. (*Amygdales—Lésions organiques.*)

In our own case there seemed to be no doubt as to its being cancer. The *growth* of the tumor, as distinguished from the ulceration and waste of syphilis, was one marked point. The tumor of the tonsil doubled in three weeks. The gross and the microscopic appearances were submitted to several observers, who were of one opinion as to its being cancer. The enlargement of the lymphatic gland and the identity of its structure, under the microscope, with that of the tonsil, were other strong points indicating cancer. The whole aspect of the man was singularly free from syphilitic taint.

Operative Interference.—Dr. John C. Warren, in his work on Tumors, mentions two cases of “scirrhus of the tonsil.” The first was ligatured by a wire. At the end of five days, after atrocious

suffering, symptoms of tetanus appeared, and the ligature was removed. The tumor sloughed away.

The second was seized with hooked forceps, drawn forward and removed with the knife, and the mass in the pharynx was removed with a curved, probe-pointed bistoury. Finally, the actual cautery was applied. The patient recovered.

“Amygdalotomy has been practised frequently in cases of cancer of the tonsil. Velpeau performed this operation upon a man sixty-three years old, who had had a cancer of the tonsil for two years. The cancerous mass covered the velum palati in front, nearly filling up the pharynx; suffocation was imminent. Having laid bare the primitive carotid and passed under it a controlling ligature, Velpeau grasped the tumor with a double hook, drew it forcibly forward, then with a bistoury, the handle of which was fixed and the blade curved, he slit up the left side of the velum palati, and succeeded in extirpating the tumor. At the same time he removed a lymphatic gland affected with cancer, resting upon the pharynx at the lower portion of the parotid region. The patient succumbed seventeen days after the operation from pyæmia. The autopsy showed that all the cancerous element had been removed, and that the large vessels had received no injury. The same operation, but this time without a controlling ligature, was performed by Mason Warren. In a similar case, Demarquay, by means of an incision extending from the anterior border of the sterno-mastoid and terminating at the top of the larynx, laid bare the vessels and nerves which came in contact with the diseased tonsil, and was able to hold them aside, while an assistant managed the *écraseur*, and thus performed the extirpation of the cancerous mass.”—*L. A. de Saint Germain*.

There can be little doubt that in this last case the *écraseur* was applied from within the mouth, although the description is obscure.

Removal by external incision is a dangerous operation, on account of the depth of the wound, and the proximity of the internal carotid artery. Numerous and important nerves cross our path, also, as the hypoglossal, the gustatory and glosso-pharyngeal. Operating from within the mouth we have the danger of swelling and sloughing, and of hæmorrhage beyond control. By attacking the tonsil from without, we have no inconvenience to fear after the primary dangers of the operation, except the risk of a pharyngeal fistula.

Our cases of œsophagotomy, however, have demonstrated that openings into the gullet close readily. The case above reported closed earlier than the wounds of the œsophagus, partly because the opening was higher up, and partly because the pillars of the palate closed the fistula by a valve-like action of their own.

The facility with which the tonsil can be enucleated with the finger is surprising. The following anatomical peculiarity, however, explains the reason pretty well:

"Perhaps the most important point of the anatomy of the tonsils, next to their proximity to the internal carotid artery, is the fibrous semi-capsule described by Chassaignac, as follows: 'When one has enucleated a well developed tonsil, and examined with attention its external and internal surface, he does not hesitate to declare that the external, or adherent face, is covered with a fibrous semi-capsule, well circumscribed, independent of the neighboring aponeurosis, and resting on the cellular tissue.'"

The arteries of the tonsil are large compared with the size of the gland; they come from the ascending pharyngeal and the inferior and superior palatine arteries.

We desire, in the report of this interesting case, to express our appreciation of the aid we have received, in the history of the disease and other points, from Mr. F. W. Draper, House-surgeon, and Mr. C. B. Brigham.

DEPRESSION AND RE-PLACEMENT OF THE SUPERIOR MAXILLA (LANGENBECK'S OPERATION).

CASE I.—*Naso-pharyngeal Polypus*. The patient was a student, aged 19 years. Thirteen months previously to his entrance to the Hospital for his present disability, he had undergone an operation for the relief of the disease of which this was the recurrence; and the history of the growth dated two years and a half before that time. Its development had given rise to the following symptoms: profuse epistaxis, complete obstruction of the nostril, and the discharge of a thin and offensive fluid. Examination discovered the presence of a firm, lobulated tumor pressing down on the soft palate and filling the upper and back part of the pharynx. The general condition of the patient was good, and the growth was not painful.

Operation.—It was removed by temporary depression of the right upper maxilla, as follows: The primary incision was carried from near the inner canthus of the eye, downward along the fold at the side of the nose, around the ala, and through the commissure of the upper lip. The flaps were reflected so as to expose the body of the bone. The symphysis of the jaw was divided through the alveolus only, and a horizontal section made with a saw across the bone from the tuberosity into the middle meatus of the nose. The section of the bone was depressed, so that it was held only by its posterior attachments. The tumor was thus exposed and reached. Its attachments to the body of the sphenoid bone and to the upper and back part of the pharynx were divided with some difficulty with scissors, and the point of section (two

inches square) cauterized with strong nitric acid. The bone was replaced and held well in position by a wire around the adjacent incisor teeth. The soft parts were easily apposed and retained by silk sutures. The hæmorrhage was inconsiderable.

The constitutional disturbance which followed the operation was comparatively slight. With a dressing of equal parts of tincture of myrrh and water, the wound healed satisfactorily, and throughout the convalescence there was no complication to impede recovery. In nineteen days, the ligatures had all come away, and there was no purulent discharge. The bone was in excellent position, and motionless. After thirty-five days he was discharged well.

Symptoms of recurrence of the growth were noticed after eleven months. The nostril became obstructed as before, and there was a feeling of fulness in the head. Otherwise than this the tumor had caused no inconvenience. There was no appearance of any disease in the pharynx, but Dr. Langmaid, with the rhinoscope, discovered the fibrous mass occupying its former position and attached, like its predecessor, to the inferior aspect of the body of the sphenoid bone and to the adjacent region of the pharynx.

Second Operation.—The steps in the operation for its removal, the operation being performed at once, were almost identical with those of the former one, and the lines of section were in the cicatrices of those of the year previous. Owing, however, to the thickening of the bone in the course of healing, it was necessary to remove a small portion at the inner angle, just below the orbital process, in order to expose the growth. The tumor, which was of the size of an English walnut, was removed by section of its pedicle with scissors, and the bone was thoroughly scraped. The hæmorrhage was not sufficient to require ligatures. The bone and soft parts were apposed as in the former operation; a gutta-percha plug between the teeth and a bandage around the lower jaw, and over the head, aided in supporting the parts.

Convalescence, in this case, was more rapid, even, than in the primary operation. Without complication or drawback, recovery proceeded steadily; and after twenty-seven days he was discharged with the wounds perfectly healed, and the bone firmly in place.

CASE II.—Naso-pharyngeal Polypus. Operation by Temporary Depression of both Superior Maxillæ.—The patient was a farmer by occupation, and was 41 years old. He had suffered from the presence of a growth in the posterior nares during the previous eleven years. Its first appearance was attended with profuse epistaxis. Its rapid growth, and the inconvenience arising from its presence induced him to submit to its removal by Dr. Peaslee, of New York, by section of the soft palate. An interval of health succeeded, in which he noticed nothing of consequence from the tumor; but thirteen months before presenting himself at

the Hospital he felt symptoms of its recurrence. This recurrent growth had been attended with no pain, epistaxis or other grave symptoms, although the patient was anæmic, and his mental condition was depressed and anxious.

Having applied again to Dr. Peaslee, he, having seen the result of my first case, kindly sent the patient to me.

Examination discovered the following condition of things. Externally, the facial expression was unaltered. There was no protrusion about the region of the antrum. Both nostrils were perfectly occluded, one having been closed many months, while the other had remained open until within three weeks. The palate was pressed down by a tumor protruding from the roof of the mouth, of the size of a pullet's egg; its anterior edge extended to within half an inch of the alveolar border. It was elastic, painless, and without special tenderness. In the process of development it had absorbed the palatine process of the left superior maxilla, the edge of the bone defining its border. The pharynx was clear, below the soft palate, but completely filled above.

Deglutition, respiration and articulation were considerably impaired, and complaint was especially made of the difficulty in breathing, the sensation being of fulness and of a danger of suffocation.

Operation.—The size of the tumor and its situation in the median region, appeared to contra-indicate operation on one superior maxilla alone. Temporary depression of whole upper jaw was accordingly effected, as follows: The primary incision through the soft parts was on either side of the nose along the natural wrinkle from near the inner canthi, around the alæ and through the commissure of the myrtiform fossa of the lips. The flaps were freely reflected, so as to expose the bone beneath as far upward as the malar prominences. With a narrow saw the body of the bone was divided from the tuberosity, forward, beneath the zygoma on each side into the middle meatus. The septum nasi and the vomer were divided with strong scissors. Nothing but the posterior attachments of the upper maxillæ now prevented their depression; and hinging on the pterygoid processes, the upper jaw was brought down so as to expose the tumor. Its attachments were found to be to the body of the sphenoid bone, and to the ethmoid. These attachments, except the first, were divided by the finger, and a section of the growth was made by means of scissors, as near the sphenoid bone as possible, the mass being too large to deliver altogether. With a gouge chisel the remaining portion was scraped away and removed.

The whole growth was in size and shape like a large lemon. In its centre it contained a cavity with the remains of broken-down tissue. Subsequent microscopic examination determined the structure to be distinctly fibrous.

The depressed jaw was restored to its position and retained

firmly by silver wire passed on each side through the malar bones. The soft parts were apposed by silk sutures; and the whole physiognomy perfectly reinstated.

The hæmorrhage during the operation did not appear to be excessive, the blood escaping externally being only of moderate amount. The attendant shock was considerable, the pulse falling off at the last until it was hardly perceptible. Stimulants by enema rallied the patient in part, but throughout the day he remained in a drowsy, unconscious state after the effects of the ether had ceased. The condition of the patient was grave from the time of the operation forward. In three hours a diarrhœa developed itself, the dejections being frequent, black, tarry and offensive, as of altered blood. Meanwhile there was no pain or nausea; the patient took nourishment, stimulants and opiates well. The pulse ranged from 128 to 136, and was small, jerky and feeble. The whole appearance was that of a patient sinking from exhaustion. The expression was listless; the skin dry and harsh; the tongue brown and parched. During the forty-eight hours after the operation there was no essential change. The diarrhœa, abdominal pain and general exhaustion continued. The wound in the face remained quiet, without sign of reaction, and there was no complaint of pain in that region.

On the third day, after continued efforts at stimulation and at control of the diarrhœa, the patient began to show more favorable symptoms. The dejections became less frequent and more natural in appearance. The mental condition was more sane. Slight suppuration commenced in the wound. The surface was warm and moist, and general signs of reaction became manifest.

On the following day, however, he relapsed into the former state. Jactitation, muscular tremor and mental distress succeeded. The pulse was 124, and very small; the urine was retained and catheterization was necessary. The face and conjunctivæ assumed a sallow hue. Steady sinking proceeded in spite of the stimulants, which from the beginning had been taken freely, and on the afternoon of the fifth day, one hundred and twenty hours after the operation, the patient died.

The removal of naso-pharyngeal polypi, otherwise unassailable, by a temporary displacement, instead of destruction of the superior maxilla, is known as Langenbeck's operation.

Performed here, for the first time, in the case described above, it was *repeated*, successfully, on *the same patient*.

The second patient was treated in a manner novel, so far as we know, the operation including both superior maxillary bones. Although he succumbed, we cannot but think that there is nothing in the operation itself, which should render it a fatal one. We know, at any rate, that much more serious mutilation of the jaws and face, in removing cancer, is almost always survived.

The hæmorrhage was moderate, and the shock should not be excessive.

Our patient was feeble and anæmic from suffering and abstinence. The pulse was poor from the beginning. He never rallied any higher than the state known as "prostration with excitement."

We should not hesitate to repeat the double operation on a suitable case, unless resort were had to a novel plan proposed by Ollier, to saw down the nose obliquely from above downwards, and operate through the upper meatus. In this way he removed a polypus weighing six ounces.

While the above was going through the press, we received, quite unsolicited on our part, the following letter from our friend, Dr. John Collins Warren, now in Paris.

As it gives interesting details as to Prof. Langenbeck's operations, which differ somewhat from ours, we have thought best to insert it here.

"Having heard that you had lately performed the osteo-plastic resection of both upper jaw-bones, I made some inquiries here to find out whether a similar operation had ever been performed in France, and have been assured that it has not. I also wrote a note to Prof. Langenbeck mentioning your operation and asking him if he had ever performed it, and begging him to let me know at the same time where I could find any account of his osteo-plastic resections of one superior maxillary bone.

"Thinking that any information on this point may be of interest to you, I send a translation of a portion of his reply, together with a few notes taken from the references which he makes.

" 'My first osteo-plastic resection of the upper jaw was performed in 1859—vide *Deutsche Klinik*, 1859, p. 471, B. Langenbeck, 'Beiträge zur osteoplastik.' My second operation is described in the *Deutsche Klinik*, 1861, p. 281, under the title 'Osteo-plastic resection of upper jaw.'

" 'I have now performed this operation 13 times for tumors in the fossa pterygo-palatina and naso-pharyngeal cavity. Of these 13 cases there were 10 complete cures and 3 deaths. These latter were cases where the tumor had perforated the base of the cranium to a large extent, and where meningitis followed the operation.

" 'The operation has also been performed: by Esmarch, in Kiel (*Deutsche Klinik*, 1863), for fibroid of the fossa pterygo-palatina, with a successful result; by Wagner, in Königsberg, and by Timon, in Heidelberg, likewise with successful result. Nussbaum, in Munich, and Billroth, in Vienna, have performed the operation in order to cut the ramus secundus Trigemini for neuralgia.

* * * * *

“ ‘The osteo-plastic resection of *both* upper jaw bones has, up to the present time, never been performed in Germany nor in Europe.’

* * * * * * *

“The following is a résumé of the report of his first operation.

“ ‘Naso-pharyngeal-polypus—resection of processus nasalis and os nasi of right side—extirpation of polyp—replacement and reunion of resected bone. The external incision was made from the middle of the glabella to the right over the processus nasalis and downwards to the ala nasi. The edges of wound were dissected up sufficiently freely to expose the nasal bone and the whole nasal process of the maxillary bone, the periosteum remaining untouched. Separation of cartilaginous portion of right half of nose from its bony connections. With a cutting bone forceps the os nasi was cut through close to septum, upwards to the nasal process of frontal bone, and, by a second cut, the processus nasalis of the maxillary bone into the sinus maxillaris. This cut ended where the nasal process of the upper jaw forms the lower border of the orbit and touches the lachrymal bone. Both bones pried up together, so that they were thrown up on to the forehead and could be held there. Removal of polyp; replacement of bones; external incision carefully united with sutures and right nostril plugged with charpie. The two bones were held together by the periosteum and mucous membrane, and a bridge of both membranes attached them to the frontal bone and the mucous membrane of the nasal cavity. The wound united by first intention—no exfoliation of bone.’

“Langenbeck had previously excised these bones for similar tumors, and refers to these operations in his report of this case.—(*Deutsche Klinik*—Resec. processus nasalis, 1854.) He has also found division of the velum palatinum with resection of pars horizontalis oss. palatin., sufficient.

“His second article is referred to above under the title of osteo-plastic resection of upper jaw.

“This operation, he says, is necessary to remove those naso-pharyngeal polypi which are attached to the neighborhood of the tuba and the foramen spheno-palatinum, as also the sinus sphenoidalis. There are also tumors which spring from the fossa pterygo-palatina* and grow into the naso-pharyngeal cavity, and in the opposite direction into the fossa spheno-maxillaris.

“The diagnosis in the present case was fibroid tumor of left pterygo-palat. fossa. In making this diagnosis he remarks that naso-pharyngeal polypi may grow into the sinus frontalis, sphenoidalis and maxillaris and labyrinth of the ethmoid, and distend the walls of these cavities, but never into the fossa pterygo-palatina. In the present case the tumor, taking its rise in the latter fossa,

* It would appear that the region to which Langenbeck gives the name of fossa pterygo-palatina, is described by Gray as the pterygo-maxillary fissure.

makes its way through the foramen sphenopalatinum into the pharynx and nasal cavity, and in the other direction into sphenomaxillary fossa, around the upper jaw, between the outer wall of this bone and the masseter muscle towards the inner surface of cheek. He has resected the zygomatic arch for a similar tumor which did not, however, extend into the nasal cavity.

“Operation, July 1st, 1861.—The lower external incisions began at the insertion of ala nasi and ran along lower border of the malar bone, describing an arc with convexity downwards, and terminating at the middle of zygoma. The second upper incision began at the nasal process of frontal bone, and, following lower border of orbit, crossed the frontal process of sup. maxillary bone and joined the lower incision at an obtuse angle: without separating the skin from the subjacent soft parts, the lower incision was continued through the periosteum to the bone, and the masseter muscle separated from the lower border of the malar bone. The fascia buccalis being cut through disclosed a lobulated whitish tumor, which lay between the depressed outer surface of the upper jaw and the coronoid process of lower jaw, and extended backwards into sphenomaxillary fossa. By separating the lower from the upper jaw, the tumor could be pushed away from the latter and the index finger could be introduced between the two into the fossa pterygo-palatina. As the upper jaw was much compressed and the fossa sphenomaxillaris and pterygo-palatina much dilated, this was accomplished without difficulty, and the tip of the finger reached as far as the nasal cavity (passing through the dilated foramen sphenopalatinum). A small Langenbeck resecting saw was passed along the finger and the upper jaw was sawn through from behind forwards by a horizontal cut, while a finger introduced through the mouth into the posterior nares protected the septum from the point of the instrument.

“The upper incision through the skin was now deepened to the bone and extended into the orbit, and the soft parts in the angle between the processus frontalis and zygomaticus of the malar bone were cut through. The second cut of the saw, starting from the same point, extended from below upwards through the process. zygomaticus and frontalis of malar bone, into the inferior orbital fissure, and from here through processus orbitalis of upper jaw to the os unguis.

“The resected upper jaw was thus left in connection with only the nasal bone and nasal process of frontal bone, and the soft parts which covered this portion of bone were untouched. The hard palate and alveolar process were also preserved untouched. The bone was pried slowly upwards by an elevator introduced below malar bone and moved on the sutures between it and the nasal and frontal bones as on a hinge joint.

“The tumor lay with its pediculated portion in the fossa pterygo-palatina, and extended sideways in both directions in

lobulated masses the size of a hen's egg. One of these filled the naso-pharyngeal cavity and the other the fossa sphenomaxillaris, and, slightly compressed by the zygoma, extended into fossa temporalis and towards fiss. orbit. inf. The antrum empty, but compressed to two-thirds its size. The septum narium pressed to right. The pediculated portion was separated from bone with difficulty. The other parts easily removed. The fossa pterygopalat. much dilated. The bone was replaced, and, showing a slight tendency to ride forwards, was kept in place by gentle pressure. External wound united by iron sutures. On 6th, wound was healed in its greatest extent, but there was a large discharge of pus from the open part. On 16th, wound completely healed, and no movement perceptible in bone.

“A second similar operation on July 12th was performed for a fibroid tumor, taking its origin from the tuba and sinus sphenoidalis, with successful result.

“From these two operations he draws the following conclusions :—

“I. The resection of the upper jaw with preservation of hard palate and alveolar process is sufficient to make accessible tumors situated in the naso-pharyngeal cavity.

“II. The extirpation of the whole jaw is therefore for this purpose no longer allowable.

“III. It is possible to saw through the whole jaw in a horizontal direction, from the foramen sphenopalatinum.

“IV. The upper jaw, which has been excised with its surrounding soft parts, can be made to reunite.

“Langenbeck still continues to employ the same method. I had an opportunity of witnessing one of these operations in July last. The tumor was similar to the one he describes above, and which he now calls a ‘retro-maxillary tumor,’ distinguishing it carefully from the naso-pharyngeal polypus. There was a considerable depression of the base of the cranium in this case, though no perforation, and the patient recovered from the operation without serious symptoms. Most of these tumors occur in the male subject, and between the ages of 15 and 30.”

It will be obvious at once, on comparing the operations of Prof. Langenbeck, M. Ollier, and our own, that the first attacks the foreign growths from the side, the second from the front through the upper meatus of the nose, and the third from the front through the lower meatus. An interesting comparison thus presents itself: first, as to the relative room gained to operate in; second, as to the seat of the tumor; third, as to the arterial supply of the bony flap; and lastly, as to the amount of external mutilation of the face.

Langenbeck's operation, it seems to us, gives the most room, but entails the most mutilation of the face, since we have two nearly transverse incisions, the upper one of which divides the whole levator group of muscles, and the masseter also. It seems more especially adapted to the class of tumors he calls "retro-maxillary," which grow from the spheno-maxillary fossa.

Ollier's operation gives very little mutilation; but although he has removed by it "probably the largest fibroid ever extracted from this region," yet we shall find, by measurement, that the operator's finger is just as far from the basilar process when he enters the upper meatus of the nose, as he is when he enters the mouth. Consequently M. Ollier has been led to modify his operation by making a second cut backwards from the lower meatus, to meet his downward cut, and thus lift out a wedge from the upper jaw.*

The operations of our own, which have been detailed above, leave no mutilation, since there is but one incision through the skin, and this follows the natural wrinkle of the nose and mouth. This operation is, of course, adapted to naso-pharyngeal tumors only. It gives room enough, in ordinary cases, but, in very large polypi, requires a double section, including both maxillæ.

Finally, as to the arterial supply. In Langenbeck's operation, the root of the flap is at the inner part of the orbit, and nasal process of the frontal bone. The main artery is the nasal branch of the ophthalmic, and some current probably comes through terminal branches of the temporo-facial division of the temporal artery.

In Ollier's operation the root of the flap is at the junction of the alæ and septum of the nose with the upper lip. We have here branches from the superior coronary, and perhaps the angular branch of the facial, if the cut is not carried too far down.

In our own operation, on one maxilla, we have all the circulation in the mucous membrane of the hard and soft palate, and branches from the ascending pharyngeal and tonsillar arteries; perhaps, also, the posterior palatine arteries, if the jaw is not torn down too far. The root of the flap is the whole suture of the palate process of the maxillary and palate bones, the soft palate and the pterygo-maxillary junction—a supply ample to secure vitality and reünion, as shown in our repeated operations on the same patient, with successful result. In the section of both maxillæ we must depend on the posterior palatine arteries, soft palate, and a portion of the buccal membrane. Unfortunately the early death of this patient left the question of reünion still unsettled.

* *Traité de la regeneration des os*—Tome second, page 483, figure B.

REPRODUCTION OF THE TIBIA.

CASE I.—*Excision of the entire Diaphysis and the lower Epiphysis of the Tibia from a girl of 13 years, for Suppurative Periostitis, followed by Regeneration of the Bone, and a useful Limb.*

July, 1868.—M. F. M., aged 13 years, after passing successively through scarlet fever and measles, was left reduced and feeble, and in April last, three and a half months ago, she began to experience constant and excessive pain in the right leg. Soon, a spontaneous opening occurred, giving exit to thin pus. The disease went on, other openings formed, and the child became much exhausted. On her admission to the Hospital the entire length of the tibia was riddled with sinuses, seven or eight in number, and all leading to denuded bone.

Under ether, an incision was made over the crest of the tibia, from the tubercle of the ligamentum patellæ to the ankle-joint. The entire shaft of the bone was found bare of periosteum, smooth, white and dead. A red and thick periosteal membrane lay on either side, and was attached only to a ridge on the posterior surface of the tibia. Even from this it was separated by the handle of the scalpel. A chain saw was passed under the upper part of the tibia, and the bone sawed just below the junction of the upper epiphysis and the shaft. On raising the shaft from its periosteal bed it was now found that the lowest sinus penetrated the ankle-joint, and that the lower articular surface of the tibia was seriously eroded and diseased. The internal lateral ligament was divided, the capsular ligament cut across subcutaneously, and the bone dissected out from its attachments to the fibula and the astragalus. Both the latter bones were found healthy. The ankle-joint was thus freely opened. No vessels required ligature, the hæmorrhage being checked with ice-water. The thickened periosteum lined the entire wound, which was left open to granulate.

The leg was laid on its outer side, in a tin splint; and the wound kept wet with liq. sodæ chlorinatæ, diluted with five parts of water.

The entire length of tibia removed was *nine* inches.

On the second day, suppuration began, and healthy granulation soon followed. The patient's condition was eminently satisfactory, the shock from the operation being trivial, and the relief from the removal of the diseased bone, marked.

On the seventh day the granulations were becoming so exuberant that the sides of the wound were approximated by adhesive strips.

On the eighteenth day, new bone could be traced beneath the whole line of granulations, feeling, under the finger, as thin ice does when we put the foot on it to test its thickness. The new growth of bone kept pace with the healing process, so that when,

after eight weeks, the wound had entirely closed over, the new shaft had acquired considerable firmness; and there was also mobility in the ankle-joint.

It was not until five months after the operation that the patient was allowed to put the foot to the ground, and then an apparatus was applied. This had a two-fold object; to lengthen the limb, and to evert the foot.

The leg was three-fourths of an inch shorter than its fellow on the inside, and one-half an inch on the outside, and the ankle and foot inclined to the position of talipes varus. A curious change had taken place in the fibula, one which Ollier says always follows excision of the diaphysis of the tibia.

The fibula was dislocated from its articulation with the upper epiphysis of the tibia, and drawn upwards, so that the head and styloid process of the fibula were one-half inch nearer the anterior superior spine of the ilium, than in the other leg. This change was due to the contraction of both the flexor and extensor muscles, without any resistance from the shaft of the tibia, the main column of support. The oblique articulation of the upper end of the fibula also favors dislocation upwards.

It is now eight months since the operation, and improvement has been uninterrupted. An apparatus, made by Dr. Nathaniel Greene, 2 Tremont Temple, Boston, combines the long Sayre's splint with Scarpa's shoe. This is kept firmly applied, and with it, the patient now begins to walk. The new bone is as wide as the old one, above, for a space of four inches, and about as firm. Below, it tapers down, and becomes more flexible. There is a fair mobility in the ankle-joint. The sole comes squarely to the ground, and the foot is turning out.

There seems to be no reason to doubt that a perfect restoration will be effected, and a most useful limb result. There never has been any trouble from the ankle-joint. The patient is growing tall and strong, and moves about continually.

CASE II.—(Service of Dr. BUCKINGHAM.) The patient, a girl of eight years, had suppurative periostitis, and denudation of the diaphysis of the tibia. About five inches of the shaft were dissected out, and the extremities cut through with the chain-saw. Recovery was excellent and continuous. A good limb resulted.

That removals of the diaphysis, and especially both diaphysis and lower epiphysis of the tibia are rare, is proved by the small number of cases, *five* in all, collected by Ollier, of Lyons, in his great work on the "Regeneration of Bone."*

These cases are so interesting, that we extract from them at some length.

* *Traité Experimentale et Clinique de la Régénération des Os, et de la production artificielle du Tissue Osseux.* Par L. Ollier, Chirurgien en Chef de l'Hôtel-Dieu de Lyon. Tome Second. Partie Clinique. Paris: Victor Masson et Fils. 1867.

“We find the most remarkable and most complete reproduction of bone in the tibia. Without recurring to older observers, we shall confine ourselves to the cases in which sub-periosteal operations have been done methodically and designedly. We find various examples of affections of different kinds, which have required operation. Larghi, and Creus-y-Manzo, have operated for chronic osteitis; Langenbeck and Neudörfer for compound fractures; Jambon and Aubert, Holmes and Lentenneur for acute periostitis.

“OBSERVATION XXX.—Sub-periosteal resection of four inches of the lower end of the tibia for suppurative osteitis, with separation of the epiphysis and invasion of the ankle-joint, by Jambon and Aubert, of Mâcon. Excellent reproduction of bone; and perfect restoration of the functions of the limb.

“Michael Duvert, 21 years old, had numerous fistulous openings on either side of the leg, giving exit to an abundant suppuration, with severe pain, fever and vigilance. Having been chloroformed, a primary incision along the fibula assured the operator that this bone could be saved. The diseased portion of the tibia was freely uncovered, and the bone divided by a chain-saw four inches above the ankle-joint.

“The inflamed and thickened periosteum was easily detached throughout. The bone, carious in its entire diameter, broke into two fragments, of which the lower, representing the epiphysis, was detached with some difficulty from the bones of the tarsus, which were found quite healthy. The consequences of the operation were very fortunate.

“After a free suppuration, the edges of the wound united by granulations, starting from the bottom. In less than two months the sinuses were closed, and a firm resistance, under pressure, was felt. Under the use of tonics and a full diet the bony repair proceeded rapidly. In less than six months he walked with the aid of one cane; and in ten months he was discharged.

“Four years having passed, the young man has worked constantly at his trade of shoe-making; his gait is easy, and he often walks twenty miles a day. Although there is shortening, there is no deformity. The portion of tibia removed has been entirely reproduced; a slight projection corresponds to the malleolus.

“This operation cannot be classed among removals of a sequestrum. There was no movable bony fragment. The diaphysis had to be sawn, and the epiphysis held to the fibrous tissues which are inserted into it in the normal state.

“OBSERVATION XXXI.—Suppurative periostitis of the whole diaphysis of the tibia, with grave constitutional symptoms. Extraction of the diaphysis before the reössification of the periosteal sheath; by T. Holmes, of London. Recovery—renewal of bone—shortening of the limb.

“The patient was 10 years old. Under chloroform it was found that the tibia was denuded above, below and behind, at every

point that the finger could reach. A long incision having been made over the tibia, separation of the periosteum from the posterior border was easily accomplished by a sound guided by the finger. The chainsaw passed under the tibia divided it near its upper extremity; the section, seized with strong forceps, was detached from the upper epiphysis. The same manœuvre was repeated for the lower end. Thus the entire diaphysis was removed, measuring seven and one-third inches. The limb was placed in a fracture-box. Six weeks later, when consolidation was already advanced, shortening was observed. It was then seen that the head of the fibula was unusually prominent. Efforts to lengthen the limb were made without avail. After six months he was exhibited to the Medical Society, in perfect health, with the limb solid and inflexible. The tibia was replaced by a bony mass of the same form, though thicker, and less regular. There was an inch and a half of shortening. He walked well with a cane.

“OBSERVATION XXXII.—Suppurative periostitis of the diaphysis of the tibia, with severe constitutional symptoms. Removal of the whole diaphysis by Lentenneur. Recovery.

“The patient was 12 years old. Denudation of the tibia the whole length of the shaft. Articulations healthy. Operation the 8th of August. Incisions above and below, the middle third of the skin being left untouched. By a to-and-fro movement the whole diaphysis was extracted. The periosteum was thickened. By the end of September there was ossification under the edges of the incisions above and below; no repair in the middle, where the skin was uncut. Marked shortening of the limb, and partial dislocation of the head of the fibula. In the month of March following, the upper and lower cicatrices were united by an incision, and the periosteum found reduced to a little fibrous cord. This was incised, and gouged, and a seton inserted. Having been retained three weeks, this restored the osteogenic properties of the periosteum, and the upper and lower spurs of bone lengthened, and approached each other. At this time the child left the Hospital.

“OBSERVATION XXXIII.—Sub-periosteal resection of the diaphysis of the tibia for chronic osteitis, to an extent of eight inches, by Larghi. Regeneration of the entire fragment removed.

“John S., 12 years of age, from Refrancore, operated upon Dec. 4th, 1853, discharged April 30th, 1854.

“Operation.—The numerous openings from the bone to the skin are clear indications of the extent of the evil which affects this bone; it is actually riddled. Below, the sinuses were very near the joint. However, it was found that the disease did not penetrate into the tibio-tarsal joint. The tibia is affected throughout its entire length; the disease appeared to stop at the apophyses, which often have a separate vitality from the rest of the bone. The mode of operation was very simple, a straight incision being

made over the tibia, from one end to the other, and down to the bone. Two transverse incisions, through the skin only, were made above and below.

“On examining the lower part of the tibia it appeared entirely eroded. Experiencing some difficulty in introducing the chain-saw, I cut away the bone with bone-forceps. The upper part was quite isolated, and removed with the chain-saw. Before commencing the resection I pushed back the periosteum below the ligaments of the ankle, and preserved it entire, without wounding either tendon or nerve. The periosteum was thickened and red.

“Four months and a half after the operation the condition was as follows: the patient was up and moving on the diseased limb. The new tibia was quite hard in its upper three-fourths. The lower fourth, at first soft and flexible, had become firm and unyielding. The new tibia was regular in form, and larger above, than the old one. The patient left the Hospital two weeks later.

“OBSERVATION XXXIV.—Ulcerative osteitis of the tibia. Subperiosteal resection of the entire diaphysis by Creus y Manso, of Grenada. Complete regeneration of the part removed. Slow recovery, with restoration of the functions of the limb.

“The patient, a boy of fifteen years, entered the Hospital on the 10th of April, 1861, for an acute inflammation of the tibia, with numerous sinuses. Operation on the 10th of June. A long incision was made, parallel to the crest of the tibia, from the tuberosity to within an inch and a half of the ankle-joint—a transverse incision, through the skin, at each extremity. The dissection between the bone and the periosteum was made with the handle of the scalpel. Having reached the posterior edge of the bone, a curved director was passed beneath it, and the chain-saw used. The entire diaphysis was removed. The epiphyses were sound. The wound was bordered by periosteum. There was no hæmorrhage. The portion removed measured seven and a half inches.

“On the 20th, the limb was somewhat stiffened, and examination showed that the work of regeneration had begun.

“The 2d of September, the lower wound was completely cicatrized, and at this point the union of the new bone with the old was complete. It was not so with the upper part, where a sequestrum of old bone was removed, at this date. It was two years before restoration was perfect.

“Since the final result of these extensive suppurations beneath the periosteum is the necrosis of the bone, the operation done in such cases may resemble the simple extraction of a sequestrum; everything will depend upon the time of interference. If we operate early, while the bone is yet alive and vascular, while the periosteum is still adherent to a portion of the surface, we make, in truth, a resection; but if we wait until the diaphysis is isola-

ted on every side, and holds only by weak medullary adhesions, near its extremities ; we do nothing but remove a sequestrum.

“ It might be asked whether it were not better to wait until the periosteal ossifications were advanced. We have already recommended expectation for the diaphyses, as long as the joints are not invaded. It is to arrest suppuration, and dépôts of pus, and prevent pyæmia, that it appears reasonable to interfere.

“ On consulting statistics we find that resections of the diaphysis of the tibia give a smaller mortality than amputations of the leg. Heyfelder gives the following table :

Cause of Resection.	No. of Cases.	Lived.	Successful.	Partially Successful.	Died.
Fractures	65	47	43	4	18
False joints	11	11	10	1	0
Deformities	16	15	14	1	1
Curvatures	11	11	11	0	0
Organic Diseases . .	22	20	19	1	2
Total	125	104	97	7	21

“ Resection of the bones of the leg, with solution of continuity, gave three-fourths of complete success, and one-fourth of partial results. Five-sixths of those operated on lived. These resections give better results than amputations of the leg, of which one-third die ; and in primary amputations, one-half are fatal.”

EXCISION OF THE HEAD OF THE FEMUR, FOR MORBUS COXARIUS.

CASE I.—(Service of Dr. BUCKINGHAM.) Feb. 12th. F. T., æt. 14, of scrofulous parentage, was healthy until last September, when he began to have pain and stiffness in left hip. Soon after, had an attack of fever lasting three weeks ; was confined to his bed thirteen weeks, being much reduced, with night sweats and emaciation. During this time an abscess was opened below the trochanter major, and it has ever since discharged pus freely, with, occasionally, small fragments of bone. He has grown feeble, pale and thin. Appetite good. No cough. The thigh is held persistently flexed. The nates are flattened, and there is a good deal of swelling. Great pain on moving the limb.

He was put to bed ; extension by weight applied, and the syrup of iodide of iron given.

March 14th.—Extremely pale, thin and exhausted, with diarrhoea, hectic and suppuration. Appetite, however, good.

The patient was now so excessively reduced that it seemed an open question whether he would survive more than a few days. It appeared very doubtful whether it was expedient to interfere with the apparent course of this disease to a fatal result. Nothing could be done, unless by operation. Without interference, he was slowly sinking. After weighing well the probabilities of the course to be pursued, Dr. Buckingham determined to give him the benefit of the only doubt which presented itself, and, with his consent, to cut open the joint and remove the diseased bone, or so much of it as might be practicable.

Operation.—March 15th. After etherization, an incision, V-shaped, point downwards, was made over the joint. The muscles were dissected away from the great trochanter; the chain saw was passed beneath, and the femur sawn through just below the trochanter. The head of the bone was now seized with heavy clawed forceps, the muscles dissected back from the acetabulum, the capsule opened, and the head and neck of the femur removed. The ligamentum teres had disappeared, but the head was not dislocated. The head of the femur was extensively eroded. The acetabulum was carious, and a few loose pieces were removed. The hæmorrhage was slight; some small vessels were tied, and the wound filled with a sponge. Stimulants and morphine were given. After the operation, the pulse was 140, and very compressible. One hour later, pulse 150, and weaker. Ten drops of tincture of opium were given in milk.

In the afternoon, a Smith's anterior splint was applied, from the toes to the abdomen, keeping the leg quiet. At 6, P.M., pulse 150; sleeping. Milk punch was ordered during night.

March 16th.—Pulse 140. Much irritative fever.

19th.—Pulse same, but he looks better. Granulations appearing.

24th.—Wound measures four by five inches. It is filled with healthy granulations. General condition improving.

31st.—Appetite better. But little pain. Wound discharges healthy pus. Appearance of countenance better.

It was now, a fortnight since the operation, evident that he had rallied from the shock, and was going on favorably. Improvement was, necessarily, excessively slow, and could be measured only by months.

April.—The wound continued to close.

May.—He improved, but suffered much from bed-sores, being very emaciated.

June.—He was put into a basket, and taken out of doors daily—and from this time a very marked improvement began.

July.—He was encouraged to use a little passive motion of the legs daily. The wound was closing; a fragment of carious bone was discharged.

August.—He steadily gained, until the 27th, when he was discharged; five months since the operation, and one year since the beginning of the disease.

At this time his condition was as follows:—Face round, fat and sun-burned. Appetite excellent. No hectic, nor sweats. Very slight discharge from wound of excision, which has nearly closed. Bed-sores healing. Has gained flesh. Both knees crippled by false ankylosis, owing to long flexion. Passive motion of them, however, is improving daily. Moving the hip gives no pain.

His ultimate recovery seems no matter of doubt. He was so near death at the time of the operation, that great fears were expressed whether he would survive it. Two years later, he was seen walking with a cane.

CASE II.—(Service of Dr. CHEEVER.) Martha S., æt. 6 years, entered the hospital Feb. 23d, 1867, with the following history:—

Nearly a year before entrance, she complained of pain in the knee, followed after a time by pain in the hip, which increased to such extent that, in November, 1866, six or seven months after the first attack, she was no longer able to stand upon the affected limb, and was confined to bed most of the time. She had always had a feeble constitution, and at the time of admission was very delicate. Her mother had died of phthisis.

On entering the hospital, the right limb was continually adducted, the toes being inverted, and the slightest efforts at abduction giving pain. There was no appreciable shortening. Bowels constipated, and appetite variable.

Until March 1st, the patient remained in bed, with extension by a five-pound weight applied. *R.* Olei morrhuæ, ʒ ss. t. d.

March 1st.—Sayre's splint adjusted. Sat up three hours.

15th to May 7th.—Extension continued, without decided beneficial effects. Sayre's splint adjusted again May 7th.

20th.—Hip was so excessively tender that the splint was kept on only about a week. The joint seems more tender, and the deformity is increasing. The head of the femur is out of its socket, and the two contiguous surfaces are rough and denuded.

The question of performing the operation of excision of the head of the femur was now seriously considered. Three months of rest and extension had been productive of no benefit. Were it possible to have the patient treated by a long-continued expectant method, and under the best hygienic influences, the case might be fairly left to nature, and recover ultimately with ankylosis. On the other hand, the circumstances of the child's friends rendered it impossible for them to take care of her, and carry out treatment. Abscess, sinuses, and perhaps death, must be an early result of letting her walk round, and of neglect.

Under the circumstances, it was not deemed precipitate to operate, even though no evident abscess existed.

A V-shaped incision was made over the trochanter major, the apex pointing downwards. The head of the femur was found to be denuded over almost its entire surface, and the disease extended to the brim of the acetabulum. The head of the femur rested on the upper and outer lip of the acetabulum; and about two drachms of pus were found around the joint. The cup of the acetabulum was filled with fungous granulations, and not carious. The diseased portion of the ilium was left to exfoliate. The femur was sawed by means of a chain saw, below the trochanter major, and a piece removed an inch and a half long. The cancellous structure was found to be very soft. Some of the adjacent softened and degenerated tissues were removed, two ligatures were applied, and the wound left open. There was very little hæmorrhage. Patient was placed in bed, on her left side, without apparatus. Evening.—Pulse 140, regular. Very little pain.

June 5th.—Patient feels bright and playful. She takes milk freely. There is no vomiting, and no pain in wound. Patient altogether as comfortable as before operation.

6th.—Sleeps well at night. Cheerful during day. Pulse 140. Strength fair. Tongue furred and moist. Wound has commenced to suppurate.

9th.—Patient has had so little pain that only one or two opiates have been required since the operation. The wound is clean.

July 5th.—Sits up in a chair, and stands on sound limb. Is able to move about the bed. Wound 3 inches by $\frac{3}{4}$ inch.

30th.—Patient has some power of motion in the affected limb. Is beginning to walk on crutches.

Aug. 2d.—Very comfortable. Walks about the ward a little with crutches, and can bear considerable weight on the foot.

15th.—Walks with crutches very smartly, bearing some weight on the right limb. Can stand without support. No pain on motion of leg. Wound nearly closed, and no dressings required.

Sept. 3d.—Patient can walk without crutches, but with a limp. Can nearly bear weight of body on affected limb. Health and strength improving. Wound almost closed. No pain or tenderness about hip. Shortening of right limb, one and a half inches. She was discharged, three months after operation.

In December (having been operated on in the previous June) had been without a cane, going up and down stairs, &c. She had been allowed to go to school. The wound remained closed and free from pain until three weeks ago, when an abscess opened in the seat of the operation, and is now discharging. On examination, there is no denuded bone to be felt. Whether this abscess is due to natural causes, to changes of temperature in going out, or to a blow she received in playing, we cannot say. It seems certain that she will perfectly recover in time.

1869.—Two years since operation, condition as follows:—walks freely without cane, and with a slight limp.

These two cases were in striking contrast with each other. In the first, the disease had advanced to the limits of endurance, and the patient was hanging between life and death. In the second, the joint was excised before an abscess of any magnitude had formed. Both cases resulted favorably.

CASE III.—(Service of Dr. CHEEVER.)—M. D., æt. 6, female, entered hospital Nov. 1st, 1867, with pain in right knee, which had existed for six months. Examination showed that the right nates was flattened and limb shortened, that flexion and rotation of the thigh upon the pelvis increased the pain, but gave no crepitus. Treated by rest in bed, and extension of three pounds. At the expiration of a month she had improved, flexion and rotation causing but slight pain. At the sixth week, however, she began to complain of pain in knee when moved, so that it was difficult to re-apply the bandage.

At the third month, she was comfortable when quiet, but the slightest jar or movement gave severe pain. Examination was made under ether, and a slight crepitus was detected in the hip-joint. No marked change during the following month.

Feb. 4th.—Appetite failing for several days. Comfortable with extension.

14th.—Restless at night. Pulse weak. Appetite poor. Moderate pressure over trochanter gives severe pain.

28th.—Failed gradually since previous date, and, under the circumstances, it was thought best to perform an operation for excision of the head of the femur.

Patient etherized, and a V-shaped incision made over the trochanter major, the apex pointing downwards. The capsule was divided by a sweep of the knife, and the head of the femur thrown from the socket. It was found to be diseased over a greater part of its surface, and the brim of the acetabulum denuded one-third of its circumference. About three drachms of pus escaped from the joint. The femur was sawed with a chain saw, just below the trochanter major. The cancellous structure was found to be very firm, and the periosteum in good condition. The carious portion of the acetabulum was left to exfoliate. There was but very slight hæmorrhage, and no ligature required. The flap was turned back upon the dorsum of the ilium, the wound being left open. Patient was placed in bed upon the left side, and the leg placed upon a pillow.

Evening.—Slept most of the afternoon. In semi-recumbent position, looks cheerful, and says she has no pain.

10 o'clock.—Sleeping. Wound dressed with dilute solution of carbolic acid—℥iiss. to Oi.

Feb. 29th.—Slept well all night, and is bright and cheerful. Wound kept open and filled with the carbolic acid wash, and covered with a compress. Appetite good. Pulse 130.

Evening.—A comfortable day. Has not required an opiate since the operation. The wound looks clean and healthy. No hæmorrhage.

REMARKS.—In this case, it will be noticed that there was apparent amelioration of the symptoms under treatment by extension, but that no real change took place. The disease progressed to the formation of pus, and to caries and partial absorption of the head. Absolute relief from pain was given by the operation, and it was followed by no constitutional shock.

This child had several relapses, and abscesses up and down the thigh.

She is now, eighteen months since the operation, able to walk about freely with a crutch; the sinuses being about closed. She is a very feeble, scrofulous child.

CASE IV.—(Service of Dr. CHEEVER.) W. K., æt. 5. This patient was admitted to the hospital in October, with pain in knee, limping gait, flattening of the nates, and slight tenderness about the hip on pressure. The opposite side of the pelvis was tipped up, and the affected leg was apparently an inch longer than the other. He was put to bed, and extension with three pounds applied. He continued very comfortable, and seemed at first to improve under treatment. After he had been in the hospital three months, he complained of more pain on moving the limb, and had considerable constitutional excitement. He was examined under ether. On moving the hip, rough grating was very plainly felt, and there was increased motion of the head of the femur, so as to allow it to slip partly from the acetabulum. Much constitutional irritation, with pain and vomiting, followed the examination.

Three days later, patient having been etherized, a V-shaped incision was made, bringing the point of section just below the trochanter major. The flap was then dissected up and the trochanter exposed. After dividing the muscles and capsule by a sweep of the knife, the head of the bone was thrown from the acetabulum, by rotating the leg. The head, neck, and part of the trochanter major, were removed by a chain saw. A small portion of the acetabulum was found diseased, but not gouged. About half of the cartilage of the head was destroyed. There was very little hæmorrhage, and only one vessel was tied. On the night following the operation, he slept better than for a fortnight previous, and the next day was bright and cheerful, and free from pain. Aside from a slight disturbance, with loss of appetite, coated tongue, and pain, coming on a few days after the operation, and probably due to an attempt to close the wound too quickly, he has done perfectly well. It is now three weeks since the operation. He is quite comfortable. The wound is granulating finely and contracting rapidly. The end of the bone is covered, with

the exception of a small piece. Can bear extension with three pounds without pain. General condition improving every day.

Three months later. The wound in the hip has almost closed. There is no discharge of pus, and only moisture enough to cover the granulations. He can swing and turn the leg in all directions. He goes all over the building on crutches, ascending three flights of stairs. He can stand without crutches. There is never any pain or hectic. There is about an inch and a quarter of shortening. His future condition seems promising and worthy to be noted.

Eighteen months since operation. Every way improved—a little serous discharge still.

CASE V.—(Service of Dr. CHEEVER.) A young man of 25, with spontaneous caries of the head of the femur and abscess, was operated on by excision. He went on well for some weeks, but ultimately sank and died of Bright's disease.

CASE VI.—(Service of Dr. CHEEVER.) Thos. C., six years of age, of feeble constitution, had suffered the symptoms of hip-disease a year before his entrance to the Hospital, and during the previous three months he had been wholly disabled from walking. There were the characteristic pain in the knee, flattening of the nates on the affected side, tenderness over the joint, wasting of the limb, and pain on motion; and manipulation gave a sensation of grating in the joint, although there was no fulness over the joint or sinus indicating the presence of pus.

The operation of resection was performed, under ether, as follows. A V-shaped primary incision was made over the great trochanter, the apex of the wound being directed downward. The flap was reflected upward, the dissection being carried down to the bone. The ligaments of the joint and the tendinous attachments having been divided, and the head of the bone, by forcible rotation, having been thrown out of the acetabulum, a chain-saw was passed around the bone just below the greater trochanter and a section made. The head of the femur thus removed was found extensively diseased, the cartilage ulcerated and eroded, and the bony tissue carious. Half a fluid ounce of pus was evacuated. Considerable hæmorrhage attended the operation, four vessels requiring ligatures. The wound was left freely open, the flap being confined upward by adhesive plaster.

The subsequent treatment was directed to the support of the patient and to the promotion of the healing of the wound. Healthy suppuration developed on the third day. The wound was freely syringed with warm water twice daily, and with diluted Liq. Sodæ Chlorinatæ (℥iij. to Oi.). After twenty-six days the wound had so far healed (the flap having been gradually drawn downwards in the process) that extension by pulley and weight

(lbs. 1½) was applied, and the limb straightened without discomfort. After two weeks the weight was increased to lbs. 3, the extension being omitted at night. The wound continued to heal satisfactorily, and the general condition improved in a marked degree. Motion of the limb is now, five months since operation, quite free and almost painless, and the patient will shortly use crutches.

CASE VII.—(Service of Dr. CHEEVER.) Andrew C., aged eight years, presented himself at the Hospital in a very pitiable condition in January last. He was at the best of poor constitution, and had hygienic surroundings, insufficient diet, and especially the exhausting conditions of his disease had reduced him greatly. He had suffered the symptoms of hip-disease three years, and during a number of months had been confined to his bed. The abscess in the joint had made a spontaneous opening in the middle third of the thigh, on the anterior aspect, and was discharging profusely. Decubitus was on the sound side with the knee of the affected limb in constant flexion. Emaciation was extreme, and the appetite was poor.

Excision of the head of the femur was performed as in the last case, the section being made just below the trochanter major. The articulation was in a condition of extensive caries. The head of the femur was much broken and was partially absorbed. The cartilage of the acetabulum had ulcerated and was nearly lost, and the bone at the deepest point of the cavity had given way, so that the pelvic fascia could be felt as an elastic partition. There was a considerable amount of laudable pus in the joint, to which the free incisions of the operation gave full exit. A seton was passed along the sinus in the thigh, connecting the wound with the spontaneous opening. The hæmorrhage attending the operation was slight. The wound was left open, with cold water dressing.

On the second day after the operation the general reaction began, which marked the beginning of a recovery so soon as the diseased joint was removed. The appetite commenced to improve; no opiate was required at night, as had been previously the case. The wound took on healthy action almost at once; on the fourth day the end of the femur had nearly disappeared beneath the granulations. With cod liver oil, and attention to the diet, the wound and the general condition, improvement has been rapid, so that now, nine weeks after the operation, the patient has gained one-half in weight, his wound is closing fast, with diminishing discharge, the motion of the limb is free and voluntary, and the prospect of recovery good.

CASE VIII.—(Service of Dr. CHEEVER.) Maggie B., aged 7, began to suffer from disease of the hip four years ago. After six

months a spontaneous cure appeared to have been effected, and there was cessation of the pain, lameness and general disturbance which had previously existed. An interval of nearly a year of health followed, in which there were no signs of active disease, local or constitutional. At the end of that respite the affection recurred, with increased severity. Without fully disabling the child, the disease developed until seventeen months before her entrance to hospital, when an abscess appeared on the inner side of the thigh in the middle third; it opened spontaneously, and discharged freely during four or five months. It then closed, and the disease remained partially latent until December last, two months before she was brought to the hospital; at that time the former symptoms recurred, and the patient at her entrance was confined to bed, emaciated and debilitated. Motion of the hip was not notably impaired, but was painful, and under ether gave moderate grating. The limb was shortened one inch. The nates of the affected side was flattened, the region over the trochanter major being considerably swollen. The sinus was open and discharging moderately; and a probe, passed through it in an upward course, impinged on the denuded neck of the femur.

Excision of the head of the bone was performed as in the other cases, the only modification being that the section of the bone was made through the trochanter instead of below it. The head of the femur presented appearances corresponding with the course of the disease. Nodules of new bone had been thrown out in front and laterally in the natural attempt at cure. In the intervals between these the bone was still carious and undergoing the process of waste. The cartilage of the acetabulum was partially ulcerated and eroded.

Convalescence commenced at once, the wound beginning to take on healthy granulating action very early. There was very slight constitutional disturbance. The chief difficulty experienced was in the tendency of the trochanter, which had been left in the wound, to ride outward and protrude. This was obviated by the application of extension after four days, the weight being one pound and a half. The tip of the process exfoliated, and the extremity of the bone soon became buried beneath the healthy granulations. The progress toward cure was satisfactorily rapid under mild dressing to the wound and cod liver oil internally, and now, after seven weeks, the patient is in excellent condition, able to sit up in a chair without discomfort, and promising a safe and early recovery.

CASE IX.—(Service of Dr. CHEEVER.) Honora D., aged 8 years, of phthisical tendency, traced the symptoms of hip disease to a fall two years before her entrance to hospital, where she presented herself for treatment. She was in very poor condition, emaciated, with delicate appetite and little strength. The symptoms referred

to the diseased hip were characteristic: there was pain, flattening of the nates, partial obliteration of its fold, grating on motion and pain in the knee. Extension of five pounds afforded partial, temporary relief. After ten days of this treatment the head of the bone was excised. The subsequent relief was marked and immediate; the wound soon granulated healthily and discharged freely, and the general condition improved under good diet, tonics and cod liver oil. There was, however, less rapid improvement than in the previous cases; the wound, although healthy, was indolent in healing. After six weeks extension was applied, with a weight of three pounds. There was gradual improvement until the tenth week, when nausea, loss of appetite, and general depression succeeded from some ill-defined cause. The patient complained of headache and weakness. There was diarrhoea, which soon gave place to obstinate constipation. A tendency to sleep developed. The pulse reached 100 and continued at that point. Soon the latent mischief developed itself, and well-marked symptoms, convulsions, headache, emaciation, delirium, stupor, pointed to tubercular inflammation of the meninges. The patient sank steadily, and after a succession of distressing symptoms died at the end of the tenth week after the operation. No autopsy was obtained.

CASE X.—(Service of Dr. CHEEVER.) David McD., aged 4, entered the Hospital February 22, after having had symptoms of disease of the hip two years. The patient's condition at the time of entrance testified to the wearing effects of the affection; he was debilitated, confined to his bed and was of very irritable disposition. The limb was shortened half an inch, and when the patient was etherized there was very slight grating in the joint. In the outside of the middle third of the thigh was an opening, communicating with a subcutaneous sinus which extended up the thigh toward the joint, and discharged freely. The slightest motion of the limb excited great pain.

An exploratory incision was made, its shape being that for excision, it having been determined to proceed with caution, on account of the obscurity of the symptoms, and because, also, the probe, when introduced into the sinus, failed to detect dead bone in the region of the joint. As soon as the cut was made, pus freely escaped; and the probe found denuded bone. The incision was enlarged and the flap dissected back, and in the bottom of the cavity of the socket was found the head of the femur, spontaneously separated. The adjacent extremity of the bone was rounded and undergoing repair.

In the three weeks since the operation, the general condition of the patient has improved to a marked degree. The discharge from the healthily granulating wound is abundant and laudable. The appetite throughout has been excellent, and all the functions are performed normally. Extension with a weight of 1b. 1½ has

been applied, and the patient is in a comfortable state, with good prospects of an early recovery.

CASE XI.—(Service of Dr. THAXTER.) E. L., twenty years of age, of intemperate habits, and enfeebled constitution, entered the Hospital on the medical side, after having complained five months of pain about the region of the hip and down the thigh to the knee. He ascribed his disability to unusual exposure to cold. He was unable to bear weight on the affected limb, and walked habitually with a cane. Both feet had been swollen, and the foot of the diseased extremity still continued œdematous. On his transfer to the surgical side, after a month of palliative treatment with iodide of potassium, opiates and blisters, there was found fulness about the joint, intense pain on motion, referred to hip and knee, and distinct crepitus was heard and felt. The condition of the patient was very debilitated.

Extension was applied with a weight of six pounds, and treatment was directed to the support of the patient and to the relief of his symptoms. After five weeks of these palliative measures, it was determined, on consultation, in view of the continued debility and retrogression of the patient, that excision of the head of the femur was the surest means of saving life, with even then a doubtful prognosis. The patient had wasted, and over the trochanter major of the sound femur, on which he lay most of the time, a bed sore was forming.

The operation of excision was performed as before described, without complication; the section of the bone being just above the trochanter major. The head of the bone was extensively carious, and the disease had involved a small portion of the acetabulum. The cavity of the joint was full of pus.

The subsequent constitutional disturbance was quite marked. The pulse ranged from 120 to 136. The appetite was indifferent, and the wound was indolent. One week after the operation, fluctuation was determined in the thigh below the wound, a large accumulation of pus having taken place beneath the fascia and among the femoral muscles; this shortly found exit through the wound at the joint and was freely evacuated. An elastic catheter could be introduced its whole length from the wound downwards, along the thigh between the muscles. Under ether, a free counter opening was made at the most dependent part, and a seton passed through it and the wound of excision. The patient was considerably relieved by this measure, and for a time gained in strength under tonic and stimulant treatment. Meanwhile the pressure from prolonged lying had caused a large slough over the opposite ilium and trochanter, and the position was changed to the back. Both ulcerations took on healthy action and there was fair progress; but the bed sores became more serious than the wound of the operation, until it became necessary to again change

the position, and this time the patient was made to lie on his abdomen and the front of the thorax, well supported by pillows. The prolonged drain on the system and the irksomeness of the position soon began to tell on the strength and vitality, and the patient resisted all remedial measures and continuously declined. Profuse sweatings still further debilitated him; the lower extremities became very œdematous, while the upper part of the body was extremely emaciated. Renewed accumulations of pus were followed by incisions. After ten weeks of almost continuous decline, the patient died from exhaustion.

We have detailed, above, *eleven* cases of excision of the head of the femur. Of these, three died:

One adult, of exhaustion.

One adult, of Bright's disease.

One child, of tubercular meningitis.

Four of these children are walking very well. The four remaining are still in bed, and under treatment.

It is too soon to deduce positive experience as to the result in these cases. One thing we conceive to be demonstrated by them, viz.: that the shock of the operation is small, and that the relief, from giving free exit to pus and caries, is as great in this disease as that experienced after the opening of an acute abscess.

Dr. Goob, foreign correspondent of the *Richmond and Louisville Medical Journal* for January, 1869—writing of this operation in Paris, says: "The Imperial Society of Surgery is at present discussing a subject, which, by no means new, has never failed to find great opposition; we mean the *resection of the hip-joint for caries*. What called forth a renewal of this question was an observation read by M. Verneuil to this body, on the 14th of October last, in which he gives an account of this operation practised by him, quite recently, on a man aged 23, suffering from the last stage of morbus coxæ. The case ended fatally, the fourth day after the resection.

"Why is it that an operation, to-day accepted by nearly all the surgeons of England, Germany, America, and even Russia, finds so few imitators in France? True, the cases practised here have not been of a nature to encourage the example.

"Leaving aside England, the birthplace of resection and where first it found its advocates, soon to be followed by German and American surgeons, of which fact such men as Sayre, Bauer, Hodges, Lyon and others have given proof, by their able writings, there, as elsewhere, this operation is established, ranks as classical and is often crowned with good results."

“Taking the following table as a basis of argument, we find that resection of the hip has been performed in France, from Roux’s first and well-known case (1847) up to this date, seventeen times, of which fifteen patients are dead and two cured. This does not include, as already stated, the four cases not cured, and of which two fall upon Giraldès and two upon Marjolin.

“If we were permitted to give our own explanation of the great mortality, it would be this:—

“*Firstly.* There are few people so badly nourished as are the inmates of our Paris hospitals, and especially the children, in whom our operation is principally indicated.

“*Secondly.* The strumous diathesis in these children, who are brought into the world by parents already degenerated, is very predominant, much more so than in America. There, it seems, many of the coxalgias, according to Sayre and Bauer, are referred to a traumatism; an opinion, by-the-bye, which finds no, or few, advocates in France.”

“The *Third* and main explanation has reference to *the delay of the operation*. This, it cannot be doubted, is, here in Paris at least, one of the greatest reasons for the ill success which attends the resections of the larger joints, and more especially those of the coxo-femoral articulation.

“The French accuse the English and Americans of being too exclusively surgeons, that they persevere less in a less heroic treatment (that is to say, they operate too early), and, therefore, their greater success from the operation. But we might, with the same justice, say, the Paris surgeons have too implicit faith in the conservative plan of treatment. True, there are cases cured without the interference of the knife; every surgeon has seen such cases (even where caries of the joint could not be doubted and where the condition of the patient seemed almost hopeless) recover by mechanical treatment. But how many are there not, where, with every care possible and a treatment both general and local, such as the most sanguine of the school of Bonnet could prescribe, the result is a fatal one.

“It is our opinion, that more could be gained in many cases, by freeing the patient from the source of the evil (especially if it be a local one) than by permitting it to remain and expecting nature to perform a cure. We pronounce ourselves in favor of early resection, the moment the surgeon has assured himself of the presence of caries of the joint; and we agree with Fock, of Magdeburg, that more lives can be saved and more useful limbs preserved by this than by any other treatment at present known for caries of the hip-joint.”

Table of Cases of Resection of Hip-joint practised in France.

No.	OPERATOR AND DATE.	Age and Sex.	DISEASE.	OPERATION.	RESULT AND REMARKS.
1	Roux. 1847.	M 5	Caries of articulation; sinuses; great emaciation.	The head dislocated and a portion of neck excised.	Died the sixth day; the acetabulum found carious.
2	Marjolin. 1855.	F 8	Caries and suppuration; spontaneous luxation of head of femur.	Resection of head of femur; acetabulum carious, but was not gouged.	Died one year afterward from continued suppuration.
3	Sédillot. 1858.	M 31	Caries of hip-joint; great emaciation.	Below great trochanter; evident of femur.	Died ten months after operation from caries of pelvis and consequent peritonitis.
4	Dolbeau. 1862.	M 17	Advanced stage of coxalgia; several sinuses.	Below great trochanter, and acetabulum gouged and cauterized.	Died the seventh day from exhaustion.
5	Bœckel. 1863.	M 8	Suppuration of joint for ten months.	Under little trochanter; the great trochanter and acetabulum are healthy.	Completely cured 18 mo. after oper.; good use of limb with 3 ctms. short; but mobility excel.
6	Gosselin. 1863.	M 17	Far advanced stage of coxalgia.	Section under great trochanter; the acetabulum is carious.	Died one month after operation from exhaustion.
7	Gosselin. 1864.	M 18	Profuse suppuration; hectic and great prostration of force.	Under great trochanter, and acetabulum gouged.	Died few days after the operation from exhaustion.
8	Dolbeau. 1864.	F 3	Caries.	Resection of the head of femur.	Died 8 mo. after op.; autopsy; perfora. of cotyloid cav.; caries of femur; tuber. at base l. lung.
9	Giraldès. 1865.	F 8	Very advanced stage of coxalgia; operation in extremis.	Under great trochanter; head found loose in acetabulum; acetab. gouged.	Died on the fourth day of hæmorrhage.
10	Sédillot. 1865.	M 9	Suppuration from a joint; from a fall.	Head and portion of neck of femur are resected; acetabulum gouged.	Cured, 14 mo.; limb feeble; walks with crutch; good motion, 2 ctms. short; in good health 1868
11	Gosselin. 1865.	M 40	Advanced stage of suppurating coxalgia.	Under great trochanter, and acetabulum gouged.	Died of exhaustion a short time after the operation.
12	Shrimpton. (Paris) 1866.	F 17	Suppurating coxalgia and subluxation of head of femur; of 10 mo. duration.	Resec. of head of femur; brim of acetab. diseased wh. head rested; not gouged.	Died six months after operation from profuse and continued suppuration.
13	Giraldès. 1866.	F 9	Advanced stage of coxalgia; numerous sinuses.	Under great trochanter, and acetabulum gouged.	Died of purulent infection the fifth day.
14	Giraldès. 1866.	F 12	Coxalgia, cachexia and extreme emaciation.	Under great trochanter.	Died of exhaustion a few days after the operation.
15	Giraldès. 1866.	M 12	Coxalgia; several sinuses behind great trochanter.	Under great trochanter, and acetabulum gouged.	Died 3 months after operation; perforation of acetabulum and suppuration of pelvis.
16	Giraldès. 1867.	M 10½	Coxalgia and spontaneous luxation.	Resection of head (very little diseased); acetabulum healthy.	Died of exhaustion six months after operation.
17	Vernueil. 1868.	M 23	Suppuration of joint since two years; subluxation of head of femur.	Resect'n suppurating portion of femur (head & portion of neck); acetab. cauter'd	Died the fourth day; infiltration of pus of the entire limb.

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SURGICAL CASES.

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